Note: This guidance is currently being updated by the Council Monitoring and Assessment Workgroup. Version 2.0 of this guidance is expected to be available by Summer 2021.

Observational Data Plan (ODP)

Draft Interim Guidance

Note: This guidance is currently being updated by the Council Monitoring and Assessment Workgroup. Version 2.0 of this guidance is expected to be available by Summer 2021.

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Preface

The Council staff acknowledges that there may need to be exceptions made on specific elements contained in this interim guidance because of the wide range of project types (planning, implementation, ecosystem restoration, infrastructure, etc.). A number of examples have been included in the appendices to help provide clarity. Please contact Jessica Henkel (jessica.henkel@restorethegulf.gov) or Brie Bernik (brie.bernik@restorethegulf.gov) if you have questions about an exception and would like to discuss.

All interim guidance is DRAFT only and will be subsequently updated with programmatic guidance developed by the Council Program Staff in coordination with the Council Monitoring and Assessment Workgroup (CMAWG) in 2019. The CMAWG has representatives from all Council Members and will be making recommendations to the Council regarding monitoring parameter guidelines, monitoring plan formats, and reporting requirements. Elements of the Observational Data Plan could necessitate updates in the future based on subsequent guidance from the Council (including CMAWG programmatic guidance).

Observational data plans are necessary for RESTORE Council funded projects to facilitate the Council's compliance with the following federal laws and policies: GPRA Modernization Act (P.L. 111-352), OMB guidance (2 C.F.R. § 200.328), and the requirements of the RESTORE Act (Section 1603(t)(2)(C)(vii)(VII)(dd)).

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Background

Under the RESTORE Act, the RESTORE Council (Council) is responsible for the administration of the Council-Selected Restoration Component and the Spill Impact Component of the Gulf Coast Restoration Trust Fund. In approving the initial Funded Priorities List (FPL) which focuses on key watersheds in the northern Gulf of Mexico region, and the projects in the State Expenditure Plans submitted under the Spill Impact Component, the Council recognizes the importance of comprehensive planning for the collection and compilation of data (i.e., any data collected, compiled, or utilized as part of a RESTORE-funded project including compliance, engineering and design, baseline, post-implementation assessment data, etc.) at both the project-specific and regional scales. Managing and ensuring comparability of these foundational data require consistencies in data collection and management among projects to enable reporting at both the project-specific and program-specific scale, as well as future assessment across the Gulf.

As part of the Council's current financial award process, projects (and programs; see below for details) are required to develop the following two planning documents:

a. An **Observational Data Plan (ODP)** providing the Council information relevant to data collection and compilation—activities undertaken to evaluate if funded projects are meeting or exceeding project goals and/or restoration targets. An ODP should clearly identify the goals and objectives of its project or program, as well as quantitative metrics by which the project or program will be assessed. An ODP also ensures that data is collected properly for data comparison and compatibility (such as for compliance, engineering and design, baseline data, financial award reporting, etc.).

b. A **Preliminary Observational Data Management Plan (DMP)** containing information relevant to project or program data management and delivery. The DMP is required to ensure that project data will be compatible and comparable with data collection efforts for the Council throughout the Gulf of Mexico region and that data is managed in a way to support the necessary reporting requirements. Interim guidance on preliminary DMPs is provided separately, and available on the [Grants Resources webpage](#).

Programs funded by the Council will be subject to the same requirements as projects, and should follow the same guidance provided for projects.

The DMP is paired with the ODP (re: data collection) and applies to all projects and all data, whether collected as part of compliance, engineering and design (E & D), planning, implementation, or post-implementation. Additionally, these plans will aid the Council in broader data management activities driven in part by Federal policies (see Preface; additional references provided separately in the interim guidance for DMPs).

Planning Overview

For projects that are funded and administered through the Council-Selected Restoration Component and the Spill Impact Component, interim guidance in developing an ODP is

provided to ensure the project documentation will (1) comply with Grant or Inter-Agency Agreement (IAA) reporting (collectively, the recipient community), and (2) meet future planning standards set forth by the Council as part of comprehensive planning.

To ensure appropriate planning and provisions for ODPs (and data management, see Preliminary Observational Data Management Plan Interim Guidance provided separately), all approved projects will be required to submit an ODP following the information in this interim guidance for Council approval prior to being awarded funds.

The Council recognizes that the projects funded under the Council-Selected Restoration Component and the Spill Impact Component vary in scope and stage of project development, as well as vary by type. For example, some projects are in the early stages of the project planning phase, whereas others have completed engineering and design and are ready for implementation. The majority of projects are ecosystem restoration projects, however there are some economic and infrastructure projects as well. All of these projects need to be able to provide ODPs. It is understood that projects that have completed the planning and design process will be able to provide ODPs with a greater level of detail than projects initiating a planning effort. The ODP is a living document and the elements should be based on currently available information. Elements of the ODP could necessitate updates in the future based on subsequent guidance from the Council (including CMAWG guidance), evolving project components, coordination with existing local and regional programs, and other new information.

Interim Guidance

The following guidelines have been prepared to assist in the development of appropriate ODPs for projects administered by the RESTORE Council in order to ensure that any data collected as part of a project is collected so it can be utilized to (1) ensure projects are compliant with financial award requirements, (2) determine whether projects are meeting or are expected to meet their intended objectives and outcomes, and (3) allows for future adaptive management actions, if warranted.

Specifically, implementation projects are required to complete adequate pre- and post-implementation observational data collection in order to:

     a. Assess if the project was constructed per the planning effort;

     b. Evaluate if the project has achieved, or is on track to achieve, the specific goals and objectives outlined in the project description;

     c. Understand why the project has, or has not, performed as anticipated;

     d. Inform potential adaptive management actions; and

     e. Improve the effectiveness and efficiency of implementation of future projects.

All data collection efforts are to be included in the ODP including data as required by regulatory agencies for compliance (e.g., Threatened and Endangered species) and/or engineering and design data (e.g., soil coring data) for planning projects; this data supports the metrics being reported on in RAAMS for grants or through the IAA.

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Applicants will be expected to adopt and utilize standard monitoring protocols of Gulf resource agencies and leverage ongoing monitoring efforts, as appropriate, to facilitate cross-program assessment of project performance within Gulf ecosystem recovery efforts (i.e., NRDA and NFWF programs). The adopted protocols should be clearly identified and deviations from the monitoring protocol standards should be disclaimed. Leveraged activities should also be identified in the plan. ODPs will be submitted and reviewed as part of the financial award application process.

The information outlined in this section must be prepared, submitted, and approved by the Council prior to award of funds for planning and implementation projects.

Please note that *ODPs are meant to act as a stand-alone documents*, and will thus contain information found elsewhere in the grant application. As such, please repeat such information in the ODP as requested rather than making reference to other sections of the grant application.

Please also note that any information that cannot be provided at the time of submitting the application should be designated TBD for "to be determined," with a timeframe and plan for providing updated information. Recipients must deliver updated ODPs to the Council at least annually until all "N/A" or "TBD" values are provided.

Components of an Observational Data Plan

The ODP should include the following components.

1) **"Planning" and "implementation" project ODPs are *required* to include:**

   a. Project name, matching exactly the application project name (and the project name in an approved FPL, if applicable)

   b. Agency overseeing the project

   c. Phase of the project (i.e., planning/implementation, as described in the grant application)

   d. Phase during which observational data is collected (i.e., planning/implementation/post-implementation)

   e. Name, phone number, and email address for the observational data collection point of contact (POC)

   f. Dates for the start and end of observational data collection, allowing a reasonable amount of time following submission/approval of the grant application

   g. Description of the project location

   h. Description of the overall project goals and objectives

   i. Description of specific goals and objectives for observational data collection

   j. Listing of "umbrella" metrics (what was entered into the Metrics section of RAAMS as part of a grant or IAA, e.g. "PRM010 - # of studies used to inform management") to be monitored in the assessment of progress

toward both short-term and long-term desired outcomes (i.e., planning, compliance, engineering and design, construction, operations, maintenance and monitoring), and listing of all measures/variables/parameters to be monitored in support of those metrics (i.e. supporting data to be collected, but not entered directly into RAAMS).

k. Identification of success criteria for both "umbrella" metrics and measures/variables/parameters collected in support of those metrics. These criteria will be used to assess project effectiveness. A single criterion should be provided per measure with a *quantified* target.

l. Budget for observational data review and reporting and final observational data report preparation and distribution (details provided in Appendix A). At a minimum, these reports should be prepared and submitted on an annual basis as part of the programmatic reporting requirements outlined in the funding agreement. The ODP budget must include:

    i. Overall budget for observational data collection

    ii. Indication of where in the Overall Project Budget, Budget Narrative or Milestones in the RAAMS application the ODP costs are found (i.e., if a person's is budgeted to work approximately $30k in the Overall Project Budget, but ~$5k of their salary is on data collection/compilation, please indicate that in the ODP budget). Note: ODP budgets cannot be their own line item cost in the overall project budget, but can be included in the description within a line item. (*See templates for examples*)

m. Data review and reporting information

n. Literature cited, if applicable

o. Completed Data Management Plan per Council Interim Guidance (see Preliminary Observational Data Management Plan Interim Guidance provided separately)

2) **In addition, the following components are *desired* for planning projects in the advanced stages of development, and are required for implementation projects:**

p. Identification and discussion of the reference sites/conditions that will be used to support assessment of the project/program impact. For example, the reference site for a habitat restoration project would typically be a nearby area with similar environmental/baseline conditions, which would enable the project effects to be measured while controlling for stochastic events/background variation.

q. Plans detailing sampling and data mining to be used in establishing baseline conditions in the project area. This plan should identify anticipated sampling frequency and parameters to be sampled.

r. Description of potential corrective actions that could be implemented to modify project performance if data indicate the project is not performing as expected. Plans detailing collection of observational data in the project area and appropriate reference sites during and after project

> implementation. This plan should include observational data collection purpose, methods, timing and frequency, sample size, site locations, and schedule for executing data collection.
>
> s. Description of quality assurance/quality control (QA/QC) procedures or approach
>
> t. Description of planned statistical analyses of observational data
>
> u. Provisions for additional monitoring following an unforeseen event, natural or man-made, that may impact project performance in order to assess whether/how the event impacted the project
>
> v. Documentation of consistency with, or deviation from, local or regional planning/monitoring efforts

Completing an Observational Data Plan

The Council acknowledges that there may need to be exceptions made on specific elements required on a.-n. above because of the wide range of project types (planning, implementation, ecosystem restoration, infrastructure, etc.). However, those exceptions need to be discussed with Council staff before they are applied (please contact Jessica Henkel (jessica.henkel@restorethegulf.gov) or Brie Bernik (brie.bernik@restorethegulf.gov) if you have questions about an exception).

A checklist to assist with ODP completion is provided on the grants website. An ODP template is provided in Appendix A. If project-level observational data plans have been developed prior to selection by the RESTORE program, recipients may provide the pre-existing plan as long as it contains all of the elements outlined above. Example ODPs are provided in Appendices B-D.

Questions regarding the overall preparation of an appropriate ODP may be directed to Jessica Henkel (jessica.henkel@restorethegulf.gov) or Brie Bernik (brie.bernik@restorethegulf.gov).

Note: This guidance is currently being updated by the Council Monitoring and Assessment Workgroup. Version 2.0 of this guidance is expected to be available by Summer 2021.

Appendix A: Observational Data Plan (ODP) Template

NOTE

Complete documentation, including descriptions of all observational data collection elements will be required by recipients for consideration and approval by the Council prior to plan implementation and award of funds. Where applicable, metric units are required (e.g., horizontal, geospatial, measurements, etc.) except when dealing with vertical datums (i.e., ft. NAVD88). For information that is not known at this time, please indicate that it is TBD and include a timeframe and plan for providing updated information. Recipients must deliver updated DMPs to the Council at least annually until all "N/A" or "TBD" values are provided.

Project Information

Project name:
[fill in, please making sure to match the name provided in the RAAMS application]

Agency:
[fill in]

Project phase (planning/implementation):
[fill in]

Project phase(s) to which this ODP pertains:
[fill in, selecting from planning, implementation, and/or post-implementation]

Project ODP point(s) of contact:
[fill in, including name, phone, and email]

Expected observational data collection start and end dates:
[fill in]

Short description of the project location:
[fill in, using a short description]

Short description of the overall project construction features:
[fill in, if applicable]

Overall project goals and objectives:
[fill in]

Specific goals and objectives:
[fill in]

Identification of Metrics, Associated Measures, and Success Criteria for Each

Metrics to be reported to RAAMS:

1. [fill in a numbered list of Metrics]

Success criteria for Metric 1 ([fill in Metric name]):
[fill in]

Measure I: [Fill in measure name]
[Measures are the data collected to support metrics. Statistical analyses of the supporting measures enable reporting on a metric in RAAMS. Metrics may require multiple measures to enable reporting or may necessitate only one measure for reporting. Measures should be numbered continuously across metrics so that no two share the name number.]

Success criteria:
a. [fill in, listing when there are multiple criteria]

[continue for all measures]

[continue for all metrics]

Identification and Discussion of the Reference Sites/Conditions

Reference conditions for Metric 1 ([fill in Metric name]):
Measure I. [fill in measure name]
[fill in]

[continue for all measures]

[continue for all metrics]

Baseline Condition Sampling/Data Mining Plans

[brief summary of approach]

Baseline plan for Metric 1 ([fill in Metric name]):
[brief summary if needed]

Measure I. [fill in measure name]
[detailed plan]

[continue for all measures]

[continue for all metrics]

Potential Corrective Actions

Corrective actions for Metric 1 ([fill in Metric name]):

> *Measure I. [fill in measure name]*
> [fill in]
>
> [continue for all measures]

[continue for all metrics]

Observational Data Collection

Plan for Metric 1 ([fill in Metric name]):

> *Measure I. [fill in measure name]*
>
> > Purpose:
> > [fill in]
> >
> > Methods:
> > [fill in]
> >
> > Schedule/Timing and Frequency:
> > [fill in]
> >
> > Sample Size:
> > [fill in]
> >
> > Site Locations:
> > [fill in]
> >
> > Quality Assurance and Quality Control:
> > [fill in]
>
> [continue for all measures]

[continue for all metrics]

Anticipated Statistical Analysis

Analysis for Metric 1 ([fill in Metric name]):

> *Measure I. [fill in measure name]*
> [fill in]
>
> [continue for all measures]

[continue for all metrics]

Unforeseen Event Contingency

Contingency plans for Metric 1 ([fill in Metric name]):
  Measure I. [fill in measure name]
  [fill in]

  [continue for all measures]

[continue for all metrics]

Consistency with Local or Regional Planning/Monitoring Efforts

[fill in]

Observational Data Collection and Reporting Budget

Estimated total budget for observational data collection:
$[fill in dollar amount]

> *Metric 1: [fill in Metric name]*
> > Measure I. [fill in measure name]
> > - [fill in list of activities] - $[fill in dollar amount for each]
>
> [continue for all measures]

[continue for all metrics]

Estimated total budget for observational data reporting:
$[fill in dollar amount] ([fill in description/breakdown])

Estimated budget for contingency monitoring:
$[fill in dollar amount]

> *Metric: [fill in Metric name]*
> > Measure I. [fill in measure name]
> > - [fill in list of activities] - $[fill in dollar amount for each]
>
> [continue for all measures]

[continue for all metrics]

Location of observational data costs in Overall Project Budget, Budget Narrative or Milestones:

> *Observational data collection costs:*
> [fill in]
>
> *Observational data reporting costs:*
> [fill in]
>
> *Contingency monitoring:*
> [fill in]

Data Review and Reporting

[fill in]

Literature Cited

[fill in]

Appendix B: EXAMPLE Ecosystem Restoration Implementation Project Observational Data Plan (ODP)

NOTE

The following information is provided as an example using a hypothetical/fictitious project and provides information regarding only two observational data elements, corresponding to the example Preliminary Observational Data Management Plan (DMP) provided separately, in Appendix A of the DMP interim guidance available on the Grants Resources webpage. The specifics provided below are not factual and do not reflect elements of a real project. The information serves simply as an example.

Complete documentation, including descriptions of all observational data collection elements will be required by recipients for consideration and approval by the Council prior to plan implementation and award of funds. Where applicable, metric units are required (e.g., horizontal, geospatial, measurements, etc.) except when dealing with vertical datums (i.e., ft NAVD88). For information that is not known at this time, please indicate that it is TBD and include a timeframe and plan for providing updated information. Recipients must deliver updated DMPs to the Council at least annually until all "N/A" or "TBD" values are provided.

Project Information

Project name:
Golden Island Restoration

Agency:
Department of Success

Project phase (planning/implementation):
Implementation

Project phase(s) to which this ODP pertains:
Implementation & Post-implementation

Project ODP point(s) of contact:
John Smith, (123) 456-7777, john.smith@dos.gov

Expected observational data collection start and end dates:
Pre-implementation monitoring will begin XX/XX/XXXX, prior to project construction, and data collection is anticipated to end XX/XX/XXXX, 10 years post construction (exact dates TBD based on award date, and will be included in an updated version of this plan with the first annual report).

Short description of the project location:
An island 30 km south-southwest of Pascagoula, FL in the Gulf of Mexico (Figure X).

Short description of the overall project construction features:
The dune creation phase of the project will extend for 2800 m along the Gulf of Mexico

shoreline raising the supratidal, intertidal, and subtidal environments to dune and supratidal elevations on Golden Island. The marsh creation phase will elevate subtidal and intertidal areas directly behind the dune to intertidal and supratidal elevations (Figure X).

The marsh creation phase will consist of two project components, 1) earthen containment dikes and 2) marsh creation in open water areas. These dikes will be placed along the border of the marsh creation areas and will be built to an elevation of 5 ft NAVD88, have a 3 m crown, and a 1V:8H slope on each side. The containment dikes will be constructed using a sediment bucket dredged from the marsh creation borrow area which is approximately 10 km south of the project area. The sediments dredged for the marsh creation features will be pumped into the marsh creation cells and fill open water areas to a maximum elevation of 3.0 ft NAVD88 to create new marsh. Following consolidation, the marsh creation area is anticipated to have an average elevation of 1.5 ft NAVD88.

The dune creation phase of this project will initiated by dredging subsurface sands from a borrow area14.5 km west of the project area. The sand dredged from the dune borrow area will be pumped to the project area and used to fill and shape the dune feature. The dune elevation will be 6 ft NAVD88, a 30 m crown, and a 1V:30H side slope above 1.0 ft NAVD88 and a 1V:60H side slope below1 ft NAVD88.

Overall project goals and objectives:
Restore the barrier island morphology while creating/restoring dune and marsh habitats and preserving the natural resources of the island.

Specific goals and objectives:
Restore barrier island structure via dune and marsh creation (construction of marsh platform through the use of dredge material) to provide a diversity of terrestrial and aquatic habitats.

Identification of Metrics, Associated Measures, and Success Criteria for Each

Metrics to be reported to RAAMS:
1. Wetland Restoration – Number of Acres Restored

[Note: Only one metric used for this example, however most projects will have multiple Metrics to report on to RAAMS. Also, for this example detailed information is limited to two measures, habitat composition and emergent vegetation cover. However, per the guidance, a complete plan would require information about all observational data including bathymetry, topography, submerged aquatic vegetation, shorebird utilization, etc. Statistical analyses of all these supporting measures would help report out on the success criteria for each metric (i.e., number of acres restored)].

Success criteria for Metric 1 (Wetland Restoration – Number of Acres Restored):
100 Acres Restored

Measure I: Habitat composition
Golden Island contains unique categories of terrestrial and aquatic habitats including

beach and dune, intertidal flats, wetlands, and upland/scrub shrub

Success criteria:
a. Post-construction diversity of emergent and submerged habitats includes beach and dune, intertidal flats, wetlands, and upland/scrub shrub.

b. Habitat diversity it maintained and less than 23% of emergent habitat is lost within 10 years post construction relative to project-completion acreage.

Measure II: Emergent vegetation survey
Determine vegetation species composition and vegetation cover within marsh and dune habitats

Success criteria:
Live vegetation cover of native saltmarsh and dune species is equal to or greater than 65% at year 5 within the marsh and dune creation areas.

Identification and Discussion of the Reference Sites/Conditions

Reference conditions for Metric 1 (Wetland Restoration – Number of Acres Restored):

Measure I. Habitat composition
The entire Golden Island will not be influenced by the restoration project, therefore areas outside of the project boundary will be used as reference condition for habitat composition (see attached map).

Measure II. Emergent vegetation survey
Reference sites will be located along transects outside of the dune and marsh creation cells and will provide data on vegetation species composition and cover of areas outside of the influence of the restoration action (Figure X).

Baseline Condition Sampling/Data Mining Plans

Available existing data sets for the Golden Island project area were inventoried and applicable data sets compiled. The datasets will be used to provide baseline information in conjunction with the proposed pre-implementation sampling.

Baseline plan for Metric 1 (Wetland Restoration – Number of Acres Restored):
The following baseline conditions for current project area will be established according to the habitat composition and emergent vegetation. Details regarding data mining for establishing those baselines are described below.

Measure I. Habitat composition
A habitat classification was conducted in 2012 for Golden Island through the FBIRP (See Golden Island Habitat Analysis Map 2012). The historic classification includes the entire project and reference area boundary for this project. The project area consisted of supratidal, intertidal and subtidal habitats. This imagery will be used to help determine historic acreages and habitat diversity.

Measure II. Emergent vegetation survey
Based on historic habitat classification of Golden Island prior to restoration efforts

the project area consists of supratidal, intertidal and subtidal habitats of which large portions had elevations insufficient for emergent vegetation growth. This imagery will be used to help determine historic acreages and habitat diversity.

Potential Corrective Actions

Corrective actions for Metric 1 (Wetland Restoration – Number of Acres Restored):

Measure I. Habitat composition
Perform operational corrections to achieve the required target elevation range including adding sediment and/or regrading

Measure II. Emergent vegetation survey
Plant saltmarsh and dune species and/or remove undesirable species

Observational Data Collection

Plan for Metric 1 (Wetland Restoration – Number of Acres Restored):

Measure I. Habitat composition
Purpose:
Document changes in habitat diversity and acreage of terrestrial and aquatic habitats over time and use these data with supporting datasets (bathymetry, topography, emergent vegetation cover, submerged aquatic vegetation, and shorebird utilization) to develop relationships between emergent habitat types and habitat utilization on Golden Island. This observational data will be used to measure project performance as a success criterion.

Methods:
High resolution aerial photography will be used to map emergent habitats on Golden Island using the technical framework established by the USFWS National Wetlands Inventory (NWI) Classification of Wetlands and Deepwater Habitats (Cowardin et al. 1979). Aerial photography will occur once per year beginning with pre-implementation (year 0), and will continue post-implementation (years 1, 2, 5, and 10). Aerial photography will be analyzed and mapped as part of this observational data collection effort. Field investigations will be conducted to ground-truth various geomorphic and vegetation habitats in the field with corresponding signatures on aerial photography.

Near-vertical color-infrared (CIR) digital aerial photography will be the primary data source for information on wetland and associated environments. Photointerpreters will use stereo heads-up-display to determine habitat classification, including the location and extents of wetlands, upland, and seagrass habitats from the imagery. Habitat categories will consist of a combination of NWI and Anderson Land Use/Land Cover Classification Systems, as well as special modifiers to characterize critical habitat for the identified species of interest. Historically, 15 NWI habitat classes comprise the majority of the barrier island land area in Florida. With respect to aquatic habitat, intertidal, tidal flats, beaches and bars will be mapped. Those habitats will be classified then further collapsed into a subset of classes for use by the program.

All habitat photointerpretation will follow protocols and standards described in Cowardin et al. (1979). Uplands are derived from a land use and land cover classification system for use with remote sensor data (Anderson et al., 1976). The digital mosaic of the high resolution color infrared aerial photography project area is brought into ESRI ArcMap Software (Redlands, CA.) where photointerpretation begins. Habitat types are delineated by overlaying project area boundaries onto the imagery and editing features. Ancillary data sets from 1998 through 2012, with similar resolutions, are utilized to help classify areas that may be difficult to identify. Imagery of the project area is also viewed on screen in stereo which helps determine vegetation height and proper habitat classification.

Schedule/Timing and Frequency:
Data collection will begin with pre-implementation (year 0) and will continue post-implementation (years 1, 2, 5, and 10). Habitat mapping is scheduled to be conducted at regular intervals post-implementation and success criteria can be assessed at each interval. Habitat classification data will be made available within 12 months of acquisition of digital aerial photography and satellite imagery. (Exact dates TBD and updated in a revised ODP provided with the first annual report).

Sample Size:
Five (i.e., once each for planning year 0 and post-implementation years 1, 2, 5, and 10)

Site Locations:
Full extent of Golden Island will be classified to include project restoration and reference sites. See attached map.

Quality Assurance and Quality Control:
A field verification process will be conducted using photosignature verification of cover types and checking problematic areas by field personnel at the request of the photointerpreters during the quality control phase of the mapping. After completion of habitat classifications, the photointerpreter will perform a Quality Assurance self-check. In addition, a second photointerpreter will perform a final in-house Quality Control, assuring accuracy and data integrity.

Measure II. Emergent vegetation survey

Purpose:
Document establishment of vegetation cover following marsh and dune creation and determine species composition and percent cover within the major habitat types through time. This observational data will be used to measure project performance as a success criterion.

Methods:
10 cross-shore transects will be established at 300m intervals in the project area bisecting dune and marsh creation areas. Each transect will contain ten randomly located vegetation stations, for a total of 100 vegetation stations. Vegetation stations will consist of 2X2m plots and sampling protocol will be consistent with Folse et. al. 2014 using a modified version of Braun-Blaunquet method

(Ellenberg and Mueller-Dombois 1974, Steyer et al. 1995).

Schedule/Timing and Frequency:
As-built (implementation phase) vegetation cover will be surveyed approximately 90-180 days following completion of construction within the marsh and dune cells. Post-implementation vegetation cover will be surveyed late summer/early fall of years 2 and 5. (Exact dates TBD and updated in a revised ODP provided with the first annual report).

Sample Size:
100 randomly located stations will be established across the project site and surveys will be collected at each station.

Site Locations:
Randomly selected locations will be established representing the full extent of marsh and dune creation areas of Golden Island.

Quality Assurance and Quality Control:
Field QA: Vegetation cover estimates should reflect the independent professional judgement of at least two field personnel. If estimates differ by greater than 5 percent both individuals should independently re-estimate cover values until a consensus is reached. Office QA: Review plot photograph for data accuracy and/or identification errors. After data transcription is complete, review datasheets versus transcribed data for omissions, duplications, completion, and consistency with field collection.

Anticipated Statistical Analysis

Analysis for Metric 1 (Wetland Restoration – Number of Acres Restored):

Measure I. Habitat composition
Detect changes in habitat composition and acreage of terrestrial and aquatic habitats over time. Comparisons will be made on historical data, data from aerial photography collected, and habitat composition maps created during pre- and post-implementation to assess habitat composition and acreage changes over time.

Measure II. Emergent vegetation survey
Analysis of Variance (ANOVA), descriptive and summary statistics for vegetation will be used to determine spatial and temporal differences in species composition and cover within the major habitat types. Analysis will be based on percent cover of the species present. The ANOVA approach may include terms in the model to adjust for station locations and elevation. This ANOVA will allow for the analysis and long-term documentation of vegetative coverage changes on the Golden Island from time 0 (i.e., as-built) through year 5 of the project.The statistical analysis described below will enable reporting on the Number of Acres Restored for this project to RAAMS.

Unforeseen Event Contingency

Contingency plans for Metric 1 (Wetland Restoration – Number of Acres Restored):

Measure I. Habitat composition

Loss in acreage of more than 23% of emergent habitats at year 5 including beach and dune, intertidal flats, wetlands, and upland/scrub shrub. The contingency response would include additional sediment placement to restore emergent land.

Measure II. Emergent vegetation survey

Live vegetation cover of saltmarsh and dune species is less than 65% at year 5 within the marsh and dune creation areas. The contingency response option would be to promote establishment of saltmarsh and dune species through vegetative planting.

Consistency with Local or Regional Planning/Monitoring Efforts

This project was developed through the Florida Barrier Islands Restoration Program (FBIRP) and proposed observational data types and methods are consistent with FBIRP standards.

Observational Data Collection and Reporting Budget

Estimated total budget for observational data collection:
$450,000

Metric 1: Wetland Restoration – Number of Acres Restored

Measure I. Habitat Composition

- Aerial Photography acquisition- $175,000 ($35,000 each year)

- Habitat Classification- $230,000 ($50,000 first year, $45,000 subsequent years)

Measure II. Emergent Vegetation survey

- Vegetation surveys- $45,000 ($15,000 per event, 3 events total)

Estimated total budget for observational data reporting:
$30,000 ($6,000 each year for 5 years)

Estimated budget for contingency monitoring:
$95,000

Metric: Wetland Restoration – Number of Acres Restored

Measure I. Habitat Composition

- Aerial Photography acquisition- $35,000

- Habitat Classification- $45,000

Measure II. Emergent Vegetation survey

- Vegetation surveys- $15,000

Note: This guidance is currently being updated by the Council Monitoring and Assessment Workgroup. Version 2.0 of this guidance is expected to be available by Summer 2021.

Location of observational data costs in Overall Project Budget, Budget Narrative or Milestones:

Observational data collection costs:
$450,000 distributed among Milestones 1-3

Observational data reporting costs:
$30,000 in data management and reporting Milestone

Contingency monitoring:
$95,000 in Post-implementation monitoring Mileston**e**

Data Review and Reporting

Annual reports will be developed for submission through RAAMS, and will measure progress towards project goals and objectives.

Literature Cited

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Appendix C: EXAMPLE Training/Jobs Corps Implementation Program Observational Data Plan (ODP)

NOTE

The following information is provided as an example using a hypothetical/fictitious project and provides information regarding only two observational data elements. The specifics provided below are not factual and do not reflect elements of a real project. The information serves simply as an example.

Complete documentation, including descriptions of all observational data collection elements will be required by recipients for consideration and approval by the Council prior to Plan implementation. Where applicable, metric units are required in all cases (e.g., horizontal, geospatial, measurements, etc.) except when dealing with vertical datums (i.e., ft NAVD88). For information that is not known at this time, please indicate that it is TBD and include a timeframe and plan for providing updated information. Recipients must deliver updated DMPs to the Council at least annually until all "N/A" or "TBD" values are provided.

Project Information

Project name:
Gulf of Mexico Youth and Veteran Conservation Corps (GYVCC)

Agency:
DOI/NPS

Project phase (planning/implementation):
Implementation

Project phase(s) to which this ODP pertains:
Implementation

Project ODP point(s) of contact:
Ellie North, 555-534-6576, ellie.north@nps.gov

Expected observational data collection start and end dates:
March X, 2016 - December X, 2018 (dates TBD based on award date, and will be updated in a revised ODP within 3 months of project identification)

Short description of the project location:
Project activities will take place in National Parks across the 5 Gulf States. Training for corps recruits will take place in coordination with the Department of Veteran Affairs (VA), local existing conservation groups, state labor offices, and community colleges in coastal areas of the Gulf.

Short description of the overall project construction features:
All GVYCC crew members will work on fully environmentally compliant projects.

Overall project goals and objectives:

The GYVCC Program will establish a regional workforce-training program to benefit local veteran and youth communities and support Gulf-coast NPS restoration implementation. Individuals trained under the program will help to execute priority restoration projects selected for implementation by the NPS. GYVCC benefits include recruiting and training local workers in a variety of habitat restoration techniques and providing paid, hands-on work experience in on-the-ground restoration projects. The GYVCC Program will have two primary activities – the first overseen by DOI/NPS and tailored to the unique needs and communities of each State, and the second overseen by DOI/VA focused on veterans. DOI/VA will work with the VA organizations within the Gulf Region to engage veterans in support of environmental restoration and implementation of projects selected by the NPS. The GYVCC Program will leverage existing partnerships among federal, state, academic and non-profit organizations and provide opportunities for local citizens to gain part of the knowledge, skills and training necessary for implementation and management of restoration projects.

Specific goals and objectives:

Program Planning and Development - Developing this program will require program planning, training, recruitment, capacity building, and an evaluation of leveraging opportunities and partnership development. DOI/NPS will complete thorough program planning, prior to mobilization of crewmembers. NPS is planning to contract out portions of the project to knowledgeable local or regional organization(s) to assist in the administration and operational development of this program. Such activities will include developing and conducting recruitment strategies, managing and overseeing corps members, facilitating training, and conducting education and outreach. This will be done through a competitive bidding process. Program planning efforts, described in more detail below, will help to shape the competitive Federal Funding Opportunity (FFO) solicitation.

Continuing Education and Training - The Program will support appropriate habitat restoration within the National Parks of the 5 Gulf States, as well as other regional restoration opportunities. Where feasible, crewmembers will be trained in monitoring techniques to assist in accurate data collection and to provide an additional technical skill set.

Identification of Metrics, Associated Measures, and Success Criteria for Each

Metrics to be reported to RAAMS:

1. Percentage of program contracted to existing local organizations

2. Number participants that completed training

3. Land Restoration – Acres Restored

Success criteria for Metric 1 (Percentage of program contracted to existing local organizations):

100 Acres Restored

Measure I: Funding amount in local contracts

Success criteria:

Funding amount in local contracts exceed 80% of total program costs

Success criteria for Metric 2 (Number participants that completed training):
At least 250 tribal youth and veteran participants annually

Measure II: Number of youth participants who gained or improved technical skills

Success criteria:

50 students per year

Measure III: Number of veteran participants who gained or improved technical skills

Success criteria:

100 veterans per year

Measure IV: Total labor hours for veteran participants

Success criteria:

1000 hours per participant/per year

Success criteria for Metric 3 (Land Restoration – Acres Restored):
TBD and updated in a revised ODP within 3 months of project identification

Measure V: Acres of habitat surveyed for vegetative planting

Success criteria:

TBD and updated in a revised ODP within 3 months of project identification

Measure VI: Acres of habitat replanted with native vegetation

Success criteria:

TBD and updated in a revised ODP within 3 months of project identification

Identification and Discussion of the Reference Sites/Conditions

Not applicable (N/A)

Baseline Condition Sampling/Data Mining Plans

Baseline plan for Metric 1 (Percentage of program contracted to existing local organizations):

Measure I. Funding amount in local contracts
0% of programs contracted out to existing local organizations

Baseline plan for Metric 2 (Number participants that completed training):

Measure II. Number of youth participants who gained or improved technical skills
Number of youth participants in existing local programs

Measure III. Number of veteran participants who gained or improved technical skills
Number of veteran participants in existing local programs

Measure IV. Total labor hours for veteran participants
0 labor hours for veteran participants

Baseline plan for Metric 3 (Land Restoration – Acres Restored):
Measure V. Acres of habitat surveyed for vegetative planting
0 acres of habitat surveyed

Measure VI. Acres of habitat replanted with native vegetation
0 acres of habitat replanted with native vegetation

Potential Corrective Actions

Corrective actions for Metric 1 (Percentage of program contracted to existing local organizations):
Measure I. Funding amount in local contracts
Implement outreach with local or regional groups, beyond those groups historically involved in conservation, to engage groups experienced in education and training.

Corrective actions for Metric 2 (Number participants that completed training):
Measure II. Number of youth participants who gained or improved technical skills
Implement outreach efforts to a broader audience engaged in youth activities.

Measure III. Number of veteran participants who gained or improved technical skills
Implement outreach efforts to a broader audience engaged in veteran activities.

Measure IV. Total labor hours for veteran participants
Implement flexible working hours and projects to accommodate participation as veterans are available.

Corrective actions for Metric 3 (Land Restoration – Acres Restored):
Measure V. Acres of habitat surveyed for vegetative planting
TBD based on success criteria update in a revised ODP within 3 months of project identification

Measure VI. Acres of habitat replanted with native vegetation
TBD based on success criteria update in a revised ODP within 3 months of project identification

Observational Data Collection

Plan for Metric 1 (Percentage of program contracted to existing local organizations):
Measure I. Funding amount in local contracts
Purpose:
To provide efficiencies across corps member groups, where knowledge and experience can be leveraged throughout the region.

Methods:
Complete an evaluation of leveraging opportunities (ELO)

Schedule/Timing and Frequency:
ELO completed in first year prior to project implementation, with reevaluation of ELOs annually TBD (dates to be updated in a revised ODP within 3 months of

project identification)

Sample Size:
N/A

Site Locations:
N/A

Quality Assurance and Quality Control:
Review ELOs for completion and accurate reporting

Plan for Metric 2 (Number participants that completed training):

Measure II. Number of youth participants who gained or improved technical skills

Purpose:
To evaluate corps contribution to youth community

Methods:
Compile list of youth participants who completed training activities

Schedule/Timing and Frequency:
Annually (dates TBD and updated in a revised ODP within 3 months of project identification)

Sample Size:
N/A

Site Locations:
N/A

Quality Assurance and Quality Control:
Review and verify list of youth participants for accuracy and completion

Measure III. Number of veteran participants who gained or improved technical skills

Purpose:
To evaluate corps contribution to veteran community

Methods:
Compile list of veteran participants who completed training activities

Schedule/Timing and Frequency:
Annually (dates TBD and updated in a revised ODP within 3 months of project identification)

Sample Size:
N/A

Site Locations:
N/A

Quality Assurance and Quality Control:
Review and verify list of veteran participants for accuracy and completion

Measure IV. Total labor hours for veteran participants

Purpose:
To evaluate economic benefit to veteran participants

Methods:
Accurate management of individual participant labor hours

Schedule/Timing and Frequency:
Annually (dates TBD and updated in a revised ODP within 3 months of project identification)

Sample Size:
N/A

Site Locations:
N/A

Quality Assurance and Quality Control:
Review and verify list of individual veteran participation for accuracy and completion

Plan for Metric 3 (Land Restoration – Acres Restored):

Measure V. Acres of habitat surveyed for vegetative planting

Purpose:
To evaluate GVYCC benefit to habitat restoration

Methods:
TBD and updated in a revised ODP within 3 months of project identification

Schedule/Timing and Frequency:
At project completion (dates TBD and updated in a revised ODP within 3 months of project identification)

Sample Size:
TBD and updated in a revised ODP within 3 months of project identification

Site Locations:
TBD and updated in a revised ODP within 3 months of project identification

Quality Assurance and Quality Control:
TBD based on success criteria update in a revised ODP within 3 months of project identification

Measure VI. Acres of habitat replanted with native vegetation

Purpose:
To evaluate GVYCC benefit to habitat restoration

Methods:
TBD and updated in a revised ODP within 3 months of project identification

Schedule/Timing and Frequency:
At project completion (date TBD and updated in a revised ODP within 3 months

of project identification)

Sample Size:
TBD and updated in a revised ODP within 3 months of project identification

Site Locations:
TBD and updated in a revised ODP within 3 months of project identification

Quality Assurance and Quality Control:
TBD based on success criteria update in a revised ODP within 3 months of project identification

Anticipated Statistical Analysis

Analysis for Metric 1 (Percentage of program contracted to existing local organizations):
Measure I. Funding amount in local contracts
Data will be compiled in the GVYCC database, and mathematical and budgetary analyses will be completed in Excel.

Analysis for Metric 2 (Number participants that completed training):
Measure II. Number of youth participants who gained or improved technical skills
Data will be compiled in the GVYCC database, and mathematical and budgetary analyses will be completed in Excel.

Measure III. Number of veteran participants who gained or improved technical skills
Data will be compiled in the GVYCC database, and mathematical and budgetary analyses will be completed in Excel.

Measure IV. Total labor hours for veteran participants
Data will be compiled in the GVYCC database, and mathematical and budgetary analyses will be completed in Excel.

Analysis for Metric 3 (Land Restoration – Acres Restored):
Measure V. Acres of habitat surveyed for vegetative planting
Habitat mapping in coordination with data collection will aid in establishing number of acres restored.

Measure VI. Acres of habitat replanted with native vegetation
Habitat mapping in coordination with data collection will aid in establishing number of acres restored.

Unforeseen Event Contingency

Contingency plans for Metric 1 (Percentage of program contracted to existing local organizations):
Measure I. Funding amount in local contracts
No existing local organizations identified. DOI/NPS will work within the local community to identify opportunities to develop new programs, and the 80% success criteria would be waived for that area/state.

Contingency plans for Metric 2 (Number participants that completed training):

Measure II. Number of youth participants who gained or improved technical skills

Not enough youth interested in program. Additional funding allocated into outreach to reach youth.

Measure III. Number of veteran participants who gained or improved technical skills

Not enough veterans interested in program. Additional funding allocated into outreach to reach veterans.

Measure IV. Total labor hours for veteran participants

No veterans recruited for program. Additional funding allocated into outreach to reach veterans.

Contingency plans for Metric 3 (Land Restoration – Acres Restored):

Measure V. Acres of habitat surveyed for vegetative planting

Unforeseen natural event damaged project area. Additional funding pursued by DOI/NPS to rebuild project area.

Measure VI. Acres of habitat replanted with native vegetation

Unforeseen natural event damaged project area. Additional funding pursued by DOI/NPS to rebuild project area.

Consistency with Local or Regional Planning/Monitoring Efforts

DOI/NPS will complete an evaluation of leveraging opportunities (ELO) and, working with the VA, will contract local or regional conservation groups experienced in corps education and training to assist in program development and execution as scoped and overseen by DOI/NPS. Training will be orchestrated by DOI/NPS, in collaboration with the VA and state partners, to focus on those skill sets required of the restoration tasks selected. Training logistics will be established to provide efficiencies across corps member groups, where knowledge and experience can be leveraged throughout the region.

Observational Data Collection and Reporting Budget

Estimated total budget for observational data collection:
$600,000

Metric 1, measure I
- ELO and planning- $100,000

Metrics 2-3, measures II-VI
- Performance monitoring during and following project completions- $500,000

Estimated total budget for observational data reporting:
$100,000

Estimated budget for contingency monitoring:
$65,000

Location of observational data costs in Overall Project Budget, Budget Narrative or Milestones:

Observational data collection costs:
$600,000 costs are found in the project budget for subrecipients and contractors

Observational data reporting costs:
$100,000 for salaries and fringe benefits in project budget summary

Contingency monitoring:
$65,000 in subcontractors (advertising costs) in project budget summary

Data Review and Reporting

Annual reports will be developed for submission through RAAMS, and will measure progress towards project goals and objectives.

Literature Cited

N/A

Appendix D: EXAMPLE Infrastructure Planning Project Observational Data Plan (ODP)

NOTE

The following information is provided as an example using a hypothetical/fictitious project and provides information regarding only two observational data elements. The specifics provided below are not factual and do not reflect elements of a real project. The information serves simply as an example.

Complete documentation, including descriptions of all observational data collection elements will be required by recipients for consideration and approval by the Council prior to Plan implementation. Where applicable, metric units are required in all cases (e.g., horizontal, geospatial, measurements, etc.) except when dealing with vertical datums (i.e., ft NAVD88). For information that is not known at this time, please indicate that it is TBD and include a timeframe and plan for providing updated information. Recipients must deliver updated DMPs to the Council at least annually until all "N/A" or "TBD" values are provided.

Project Information

Project name:
Dauphin Island Public Pier

Agency:
AL

Project phase (planning/implementation):
Planning

Project phase(s) to which this ODP pertains:
Planning

Project ODP point(s) of contact:
Ellie North, 555-534-6576, ellie.north@nps.gov

Expected observational data collection start and end dates:
March X, 2016 - March X, 2017 (exact dates TBD based on award date, and will be updated in a revised ODP within 3 months of contracting sub-recipient)

Short description of the project location:
Project is a planning project. No construction will occur during the course of this funding cycle.

Short description of the overall project construction features:
All GVYCC crew members will work on fully environmentally compliant projects.

Overall project goals and objectives:
Alabama will complete planning, design, engineering and feasibility assessments for a public fishing pier to be built on the south facing side of the Dauphin Island, AL. Once

these planning activities are completed, the state would have a full understanding of the feasibility of building the pier complete with environmental impact and public benefit metrics.

Specific goals and objectives:

- Field Surveys, Investigations, Studies and Reports

- Draft Construction Plans and Order of Magnitude Construction Estimate Projection

Identification of Metrics, Associated Measures, and Success Criteria for Each

Metrics to be reported to RAAMS:
1. Number of studies reported to management (i.e. this could support development of Engineering and Design plans or environmental compliance)

2. Number of Engineering and Design plans developed

Success criteria for Metric 1 (Number of studies reported to management):
4 reports compiled in support of Engineering and Design (*Note: Likely several additional performance measure data categories to be collected during a project of this type, all of which would need to be included below*)

Measure I: Beach and nearshore profile assessments
Success criteria:
Profiles from a period of 10 years compiled and assessed for maximum difference for Erosion and Scour Report

Measure II: Wave height prediction
Success criteria:
Wave climate data for recent extreme wave events for previous 5 years compiled and assessed for Wave Height Prediction Report

Measure III: Construction site sediment analysis
Success criteria:
Collection of sediment cores, and sediment analysis report completed

Measure IV: Water quality and turbidity analyses
Success criteria:
Pre-construction water quality and turbidity analyses completed during four total assessments. Water quality and turbidity data report completed.

Success criteria for Metric 2 (Number of Engineering and Design plans developed):
One complete and certified pier Engineering and Design plan and report submitted through RAAMS after public comment

Measure V: Draft construction plans
Success criteria:
Draft construction plans completed and certified after public comment

Measure VI: Acres of habitat replanted with native vegetation
    Success criteria:
    TBD and updated in a revised ODP within 3 months of project identification

Identification and Discussion of the Reference Sites/Conditions

During planning, engineering and design studies will document baseline conditions at both the construction and reference sites (see below). Reference sites will be included in a revised ODP within 3 months of contracting sub-recipient.

Baseline Condition Sampling/Data Mining Plans

Baseline plan for Metric 1 (Number of studies reported to management):

Measure I: Beach and nearshore profile assessments
Profile data is available from the Bureau of Beach and Coastal Systems at http://www.dep.state.al.us/beaches/data/data.htm

Measure II: Wave height prediction
U.S. Army Corps of Engineers, Coastal & Hydraulics Laboratory (CHL) Wave Information Studies (WIS) hindcast data is available at http://chl.erdc.usace.mil/

Measure III: Construction site sediment analysis
Sediment characteristics to be identified during planning stage

Measure IV: Water quality and turbidity analyses
Baseline turbidity and water quality to be determined during the planning stage

Baseline plan for Metric 2 (Number of Engineering and Design plans developed):
Measure V: Draft construction plans
Draft construction plans to be developed during planning stage

Potential Corrective Actions

Corrective actions for Metric 1 (Number of studies reported to management):
Measure I. Beach and nearshore profile assessments
N/A - assessments must be completed to meet success criteria

Measure II. Wave height prediction
N/A - report must be completed to meet success criteria

Measure III. Construction site sediment analysis
N/A - analysis must be completed to meet success criteria

Measure IV. Water quality and turbidity analyses
Increase number of total assessments until success criteria met and data report complete

Corrective actions for Metric 2 (Number of Engineering and Design plans developed):

Measure V. Draft construction plans

N/A - plans must be completed to meet success criteria

Observational Data Collection

Plan for Metric 1 (Number of studies reported to management):

Measure I: Beach and nearshore profile assessments

Purpose:
Erosion and Scour Report

Methods:
Compiled using profile data available from the Bureau of Beach and Coastal Systems at http://www.dep.state.al.us/beaches/data/data.htm

Schedule/Timing and Frequency:
Completed 3 months after receiving funding (TBD and updated in a revised ODP within 3 months of contracting sub-recipient)

Sample Size:
TBD and updated in a revised ODP within 3 months of contracting sub-recipient

Site Locations:
Proposed pier construction site

Quality Assurance and Quality Control:
TBD and updated in a revised ODP within 3 months

Measure II: Wave height prediction

Purpose:
To develop wave height prediction report

Methods:
Wave climate data to be assessed from Wave Information Studies (WIS) hindcast data available at http://chl.erdc.usace.mil/

Schedule/Timing and Frequency:
Completed 3 months after receiving funding (TBD and updated in a revised ODP within 3 months of contracting sub-recipient)

Sample Size:
TBD and updated in a revised ODP within 3 months of contracting sub-recipient

Site Locations:
Proposed pier construction site

Quality Assurance and Quality Control:
TBD and updated in a revised ODP within 3 months of contracting sub-recipient to ensure all data elements are accounted for in QA/QC

Measure III: Construction site sediment analysis

Purpose:
To determine pier design and building methods

Methods:
Comprehensive sediment core analysis to be conducted

Schedule/Timing and Frequency:
Completed 4 months after receiving funding (TBD and updated in a revised ODP within 3 months of contracting sub-recipient)

Sample Size:
100 sediment cores to be analyzed

Site Locations:
Proposed pier construction site

Quality Assurance and Quality Control:
Review sediment core analyses and reporting for completion, accuracy, and data appropriateness

Measure IV: Water quality and turbidity analyses

Purpose:
To complete water quality and turbidity data report

Methods:
Time series water-quality data; include temperature, specific conductance, dissolved oxygen and turbidity, collected at a minimum of one-hour intervals at two locations. Additionally, core borings obtained beyond the depth anticipated for pile embedment will provide geotechnical data to assess the potential for generated turbidity during pile jetting.

Schedule/Timing and Frequency:
Sites will be sampled every 6-8 weeks for a total of 8 samples during the first year pre-construction

Sample Size:
2 locations

Site Locations:
The first location will be near the proposed work area, and the second at a control reference location proximate to the first to allow the determination of natural or background water quality variations

Quality Assurance and Quality Control:
Complete and document instrument calibration per specifications of the data logger manufacturer and at intervals as established by industry standards. Review dataset for completion and omit unexplained data anomalies and/or erroneous data

Plan for Metric 2 (Number of Engineering and Design plans developed):

Measure V: Draft construction plans

Purpose:
To develop Order of Magnitude Construction Estimate Projection

Methods:
Incorporate data from field surveys and analysis reports to develop design and building plans using best management practices

Schedule/Timing and Frequency:
Complete at end of project period

Sample Size:
TBD and updated in a revised ODP within 3 months of contracting sub-recipient

Site Locations:
Proposed pier construction site

Quality Assurance and Quality Control:
TBD and updated in a revised ODP within 3 months of contracting sub-recipient to ensure all data and information are incorporated into QA/QC plan for construction plan

Anticipated Statistical Analysis

Analysis for Metric 1 (Number of studies reported to management):

Measure I: Beach and nearshore profile assessments
Beach profile data will be transferred into Regional Morphology Analysis Package (RMAP). RMAP is part of the Coastal Engineering Design & Analysis System developed by the U.S. Army Corps of Engineers. RMAP will be used to analyze beach-profile characteristics, interpolate data points at equal intervals, and calculate volumes above different contours.

Measure II: Wave height prediction
STWAVE model to be used to compute wave propagation from 100 miles offshore to the proposed Dauphin Island Pier location (Conrad et al. 2007).

Measure III: Construction site sediment analysis
Laser diffraction will be used for particle sizing.

Measure IV: Water quality and turbidity analyses
Appropriate statistical comparisons (e.g., hypothesis testing, ANOVA, multivariate methods, etc.) will be used to summarize the water quality data and compare these data with the decision criteria.

Analysis for Metric 2 (Number of Engineering and Design plans developed):

Measure V: Draft construction plans
Any appropriate statistical analyses will be conducted in developing Draft construction plans. Statistical analyses to be used will either be included here or designated "N/A" in a revised ODP within 3 months of contracting sub-recipient.

Unforeseen Event Contingency

Contingency plans for Metric 1 (Number of studies reported to management):

Measure I: Beach and nearshore profile assessments
N/A to this planning project

Measure II: Wave height prediction
N/A to this planning project

Measure III: Construction site sediment analysis
N/A to this planning project

Measure IV: Water quality and turbidity analyses
N/A to this planning project

Contingency plans for Metric 2 (Number of Engineering and Design plans developed):

Measure V: Draft construction plans
N/A to this planning project

Consistency with Local or Regional Planning/Monitoring Efforts

Planning efforts will be coordinated with Mobile County, AL, and the town of Dauphin Island.

Observational Data Collection and Reporting Budget

Estimated total budget for observational data collection:
$40,000

Metric 1: Number of studies reported to management
Measure I. Beach and nearshore profile assessments
$5,000

Measure II. Wave height prediction
$5,000

Measure III. Construction site sediment analysis
$10,000

Measure IV. Water quality and turbidity analyses
$20,000

Estimated total budget for observational data reporting:
$70,000

Metric 2: Number of Engineering and Design plans developed
Measure V: Draft construction plans
$70,000

Estimated budget for contingency monitoring:
$0

Location of observational data costs in Overall Project Budget, Budget Narrative or Milestones:

Observational data collection costs:
- $40,000 represented in the costs indicated for Milestones 1-4

Observational data reporting costs:
- $70,000 represented in the costs indicated for Milestone 5

Contingency monitoring:
N/A

Data Review and Reporting

The state will document each of the performed assessments and communicate the results to the public. The state will produce a final annual report for submission through RAAMS that will measure progress towards project goals and objectives.

Literature Cited

N/A